FluoTime 250

A compact and modular lifetime spectrometer

- Fully automated compact and modular system
- Filter based emission selection, optional small monochromator
- TCSPC and MCS operation
- Software with step by step application wizards and scripting option
- Lifetimes from picoseconds to milliseconds

Applications

The FluoTime 250 is a high performance fluorescence lifetime spectrometer for routine and research applications. It can be used to study various samples and perform several applications, including:

- Fluorescence decays
- Phosphorescence decays
- Time-resolved anisotropy
- Time-resolved emission spectra with optional monochromator
- Lifetime kinetics

The FluoTime 250 integrates all essential optics and electronics for time-resolved luminescence spectroscopy into a compact, fully automated device. PicoQuant's long standing experience with pulsed laser sources and time-correlated single photon counting forms the basis for the instrument's design.

The FluoTime 250 is designed to assist the user in carrying out routine as well as complex measurements quickly and with high reliability. This is achieved through fully automated hardware components and a versatile system software featuring wizards that provide step-by-step guidance. Advanced users can get full control over all aspects of the spectrometer thanks to a customized mode and integrated scripting language.

In its basic configuration, the FluoTime 250 uses a motorized filter wheel for wavelength selection. An optional monochromator for the UV/VIS spectral range is available. A small selection of detectors as well as broad range of pulsed diode laser or LEDs from PicoQuant can be attached to the spectrometer. It can be further adapted to your requirements via a series of accessories and easily exchangeable sample holders.

Despite its small footprint, the FluoTime 250 is very sensitive: it can reliably detect the fluorescence decay of samples with concentrations down to 10 pMol (measured on a coumarin sample).

Specifications

Monochromators	
Type	Czerny-Turner design
Focal length	150 mm
Aperture	F/4.2
Stray light rejection	10^{-5}
Grating	1200 g/mm, blazed at 500 nm
Resolution	0.3 nm
Step size (min)	0.004 nm
Slit width adjustable between	0 - 10 mm, (0-54 nm BP; continuously adjustable, completely motorized)
Wavelength accuracy	0.3 nm (1200 g/mm grating)
Wavelength repeatability	0.01 nm
Dispersion	5.4 nm/mm
Operating environment	
Computer system	Windows 10
Power requirements	110 V to 230 V, 50/60 Hz
Dimensions (base unit)	
Without monochromator	900 × 550 × 400 mm (w × d × h)
With monochromator	900 × 1 100 × 400 mm (w × d × h)

Excitation sources			
Light source	**Laser Diode Heads (LDH Series)**	**Picosecond Laser Module (VisUV / VisIR)**	**pulsed LEDs (PLS Series)**
Wavelengths	266 - 1990 nm	266, 280, 295, 355, 532, 766 and 1531 nm	245 - 600 nm
Pulse width	40 - 400 ps	70 - 100 ps	400 ps - 1 ns
Repetition rate	up to 80 MHz	up to 80 MHz	up to 40 MHz

Detectors					
Type	**PMT (PMA-C Series)**			**NIR-PMT**	
Spectral range (nm)	185 - 700,	300 - 820,	300 - 900	950 - 1400	
Dark counts (cps, at 20 °C, typ. value)	---	< 200	< 3000	< 10 000	
Transit time spread (ps)	< 180	< 180	< 180	< 300 ps	
Type	**PMA Hybrid**				
Spectral range (nm)	220 - 650	220 - 850	300 - 720	300 - 870	380 - 890
Dark counts (cps, at 20 °C, typ. value)	< 100	< 200	< 700	< 500	< 1000
Transit time spread (ps)	< 50	< 50	< 120	< 130	< 160

These tables are updated on a regular basis based on data of recently manufactured laser heads. Other specifications such as shorter pulse widths or higher powers than listed might be possible depening on the performance of diodes on stock. Please contact us for more information. All measurements shown may be subject to a 10 % callibration error. Each laser head undergoes an extensive burn-in test to ensure long-term stability and is shipped with a comprehensive set of test data. This test data is kept in our database, which already holds records of more than 18 years.

Data acquisition			
Type	PicoHarp 300	TimeHarp 260 PICO	TimeHarp260 NANO
Number of time channels/ curve	up to 65536	up to 32768	up to 32768
Count depth	16 bit	32 bit	32 bit
Time resolution (bin width)	4 ps	25 ps, 2.5 ns (long range mode)	250 ps
Dead time	< 95 ns	25 ns, 2.5 ns (longe range mode)	< 1 ns
Full scale time range	260 ns - 33 µs	819 ns - 1.71 s 81.92 µs - 171 s (long range mode)	32.8 µs - 68.48 s

* Values provided by Hamamatsu.

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